

New York State Green Procurement Program Response to Comments on Lower Carbon Concrete Specification

Background – the “Lower-Carbon Concrete” Specification was tentatively re-approved in December of 2021, after several substantive comments had been addressed in the updated specification.

The specification itself was written in collaboration between several state entities and industry experts providing input/review, including DASNY, DEC, PA NY/NJ, NYSERDA, NYC DDC, NYC Mayor’s Office, the Concrete Masonry Association, KHH Engineers.

It approaches reduction of embodied carbon in concrete by

- 1) calling for transparency through use of EPDs (Environmental Product Declarations) which would list the carbon information of concrete mixes, at least at regional level of data,
- 2) setting cement content limits based on use and design to proper strength (by Professional of Record),
- 3) replacing cement with appropriate SCMs,
- 4) reducing cement by increasing use of blended aggregates and reducing paste.

It provides similar requirements for CMU (Concrete Masonry Units) and then provides a list of additional recommendations to reduce carbon related to concrete applications.

Commenting Entities – We have received comments since December, summarized in categories below, from several entities including Brimstone Energy, Healthy Schools Network, Urban Mining Industries, LafargeHolcim, NUCOR Steel, Natural Resources Defense Council, National Ready Mixed Concrete Association, Open Air, St Mary’s Cement LLC and United Materials of New York, New York Construction Materials Association, Inc (NY Materials), and the Clean Air Coalition of Greater Ravena-Coeymans.

Issues raised –

1) EPD clarifications

There was concern that EPDs do not include lifespan of the product or transportation GHG, which would come into play when comparing embodied carbon across materials and suppliers. Additionally, there is concern that it is pointless to ask for EPDs as there is no requirement for comparison to a baseline. Notes also that an approximate CO₂e is not included for GGP.

Response – The purpose of the GreenNY specs is to support the market shifts that are needed to achieve the goals of the state. EPDs are an emerging, though already prominent, resource that can be used by the Design Professional to inform project design to support state goals.

Recommendation –Include GGP data for CO₂e in the chart in the specification.

2) Design limits and market –

There were many concerns that this specification dictates the mix designs. Also, that PLC use should be encouraged beyond the current 10% industry norm. There is also a concern that calling for limits to cement use will cause cement producers to not innovate as their product is used less.

Response –This specification is intended to set limits to one known significant contributor to the embodied carbon levels in concrete, industry-wide, and to provide recommendation for avenues for the Design Professional to explore to meet the performance requirements for a project while reducing embodied carbon of the concrete mix used in the specific project. Calling for limits will encourage attention from any designers not yet being rigorous about carbon reductions, and not restrict seasoned designers from doing more.

Recommendation – No recommended changes.

3) Need flexibility due to market, design intent, and weather for SCMs

There is a concern that by calling out fly ash and slag as zero lbs CO₂e burden causes a beneficial regard for use of those materials. It is felt that there should be information or listed benefit to regional production or post-consumer recycled content. It is suggested that GGP can have additional Alkalai-silica reaction (ASR) concerns. Finally, that listing GGP separate from SCM in one of the sections undermined GGP acceptance.

Response – We agree that we do not want to promote the use of materials that perpetuate toxic burden. The transition away from coal is underway, and the existing stock of fly ash and slag is being depleted. GGP is moving into use as are other SCMs. Fly ash and slag are from an industry waste stream and their use can be beneficial when encapsulated in concrete applications. As such, they are preferable to cement at this time. ASR is not a concern with the micron-level grading of GGP. We intend this specification to support the transition away from fly ash and slag by accepting GGP, and calling for EPDs to increase transparency

Recommendation – Place GGP in the list of SCMs acceptable for at least 30% replacement of cement.

4) Flexibility in optimized aggregates

There is an assumption of a requirement for blended aggregate use.

Response – As this specification is not for a product, but for the design of a material used in complex building and infrastructure work, it is the responsibility of the Professional of Record to design an appropriate mix. The language is clear that blended aggregate should be considered.

Recommendation – No recommended changes.

5) Input on Encouragements

Concerns that requiring mass timber is inappropriate and that all structural work is currently right sized.

Response – The Encouragements are not requirements, are not in any order, and will not apply to all projects or performance intents. They are included to broaden the understanding of reducing embodied carbon in the materials used in the design and construction industry and in projects. It remains the responsibility of the Design Professional to select appropriate approaches to the design goals.

Recommendation – No recommended changes.

6) General

There is concern that what is covered in this spec is already normal practice. There is a request for a tiered system to set maximum cement contents or to move to a performance-based method. A request to define cement.

Response –This specification provides avenues for the Design Professional to explore to meet the performance requirements for a project while reducing embodied carbon of the concrete mix used in the specific project. It sets limits for those in the industry that are not yet engaging in changes to their designs, and it also allows greater reductions for those who have the experience and interest to innovate.

Recommendation – Add the definition for Cement (from Merriam-webster)

7) Non-substantive

Suggestion that packaging information should not allow use of Styrofoam. A request to term slag “steel slag”.

Response – Packaging information is generic for GreenNY specifications, and this input can be considered when that language is updated. Steel Slag is not a general term. Slag is.

Recommendation – No recommended changes.